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Sovereign Wealth Funds and Sustainable Development: A Case Study Based on Norwegian Government Pension Fund Global and Abu Dhabi Investment Authority

Yifan Meng, Giuseppe Telesca*

School of Social and Political Sciences, University of Glasgow, Glasgow, Scotland, UK

**Corresponding Author*

Abstract: Sovereign Wealth Funds (SWFs), as long-term national investment vehicles, are regarded as pivotal forces in driving global sustainable development due to their substantial asset scale and long-term investment frameworks. This paper used the Government Pension Fund Global (GPFG) of Norway and the Abu Dhabi Investment Authority as cases, and through a comparison of their governance structures, investment strategies, and integration paths with the Sustainable Development Goals (SDGs), the unique roles and challenges of SWFs in promoting sustainable development were explored. The study found that GPFG achieved the large-scale application of sustainable investment through a stringent Environmental, Social, and Governance (ESG) framework and a dynamic adjustment mechanism; whereas ADIA promoted energy transition and industrial capacity upgrading in the Middle East by relying on regional cooperation and technology transfer. Although their paths differ, both cases demonstrate that the effectiveness of SWFs hinges on governance transparency, strategic positioning, and in-depth integration with SDGs. This study offers theoretical foundations and practical references for SWFs to optimize their sustainable development strategies.

Keywords: Sovereign Wealth Funds; Sustainable Development; ESG Framework; Resource Rents; SDGs Integration

1. Introduction

Sovereign Wealth Funds (SWFs), as government-owned investment institutions, primarily aim to invest surplus revenue from exports or other national assets to establish a sustainable fund system for diversified investments. This system not only serves the mission of accumulating wealth for future generations but also plays a pivotal "umbrella" role in the economic domain. SWFs are predominantly concentrated in countries rich in natural resources, which have amassed substantial funds through the export of oil, natural gas, or minerals. As significant capital pools capable of large-scale investments, SWFs play a crucial role in achieving macroeconomic balance, particularly intergenerational equity [1]. Sustainable development refers to meeting the needs of the current generation without compromising the ability of future generations to meet their own needs. This objective encompasses three dimensions: economic, social, and environmental, requiring equitable, inclusive, and green growth globally. As global environmental issues intensify and social inequalities widen, sustainable development has become a focal point of international concern [2]. SWFs, leveraging their long-term perspectives and substantial scale, have emerged as key drivers in advancing these goals. They can contribute to achieving sustainable development objectives by funding green energy projects, supporting sustainable industries, and stabilizing national economies [3]. Challenges such as the global climate crisis, social inequality, and ecological degradation necessitate a redefinition of "value creation" within the financial system. Norway's GPFG and the UAE's ADIA, as quintessential representatives of SWFs, exemplify national strategic differences in sustainable development practices and provide models for how global long-term capital can facilitate green transformation. This paper explores how SWFs can achieve synergies between economic value and socio-environmental goals through optimized investment strategies by comparing and analyzing their governance models, investment approaches, and pathways for integrating with the Sustainable Development Goals (SDGs).

2. Case Studies: Sustainable Development Paths of GPFG and ADIA

2.1 Norway's Government Pension Fund Global (GPFG)

Established in 1990, GPFG is one of the world's largest sovereign wealth funds, with assets exceeding USD 1.4 trillion. The fund primarily derives its income from Norway's oil and gas exports and is designed to finance future pension payments for the nation. It can be mentioned as one of the most successful sovereign wealth funds that succeeds in the connection between its financial operations and sustainable development objectives [4].

2.1.1 Governance structure

GPFG is overseen by Norway's Ministry of Finance, while investment decisions are executed by Norges Bank Investment Management (NBIM). NBIM adheres to stringent risk management and compliance procedures in its investment decision-making processes and regularly submits annual reports to the Norwegian Parliament and the public on portfolio composition, plans, and outcomes to enhance public trust. GPFG has garnered global acclaim for its exemplary governance and accountability, characterized by high transparency and independence. Additionally, GPFG's Ethics Council reviews the investment process, employing a rigorous ethical screening mechanism that excludes companies involved in coal mining, deforestation, environmental degradation, human rights abuses, or any other activities contrary to the fund's sustainability objectives.

2.1.2 Investment strategy

GPFG emphasizes diversification and long-termism in its investment strategy, allocating capital across global stocks, bonds, real estate, and other asset classes. It integrates ESG factors into its investment approach, actively driving portfolio companies to improve their ESG performance. Specifically, GPFG employs exclusionary, thematic, and active ownership strategies to invest in companies and projects with strong ESG credentials. It also discloses its investment strategies and performance metrics to investors and the public through regular investment reports and ESG assessments.

2.1.3 Integration pathways with SDGs

GPFG fully incorporates the requirements of the United Nations Sustainable Development Goals into its investment decision-making processes. By investing in companies and projects that contribute to achieving the SDGs—such as those in education, health, clean water, and sanitation—GPFG actively supports global sustainable development. For instance, GPFG has excluded numerous high-carbon enterprises and companies with severe human rights issues, while increasing investments in renewable energy and green building sectors, particularly wind and solar projects in the European Union. This aligns closely with the fund's objective of transitioning toward a low-carbon economy. GPFG also actively engages in global climate governance, endorsing international climate agreements and emission reduction targets, leveraging its influence to drive the global shift toward a low-carbon economy. Its exclusion policies extend to industries involved in deforestation and coal usage, underscoring its steadfast commitment to environmental protection [5]. Moreover, intergenerational equity, a core principle of GPFG, is advanced by utilizing funds saved from oil revenues and managing them responsibly to benefit future generations, marking a significant step toward environmental stewardship.

2.2 ADIA of the United Arab Emirates

Established in 1976, ADIA is the largest sovereign wealth fund in the Middle East, with assets approaching USD 1 trillion. The fund primarily derives its income from the UAE's oil exports and is designed to provide financial support for the nation's future economic development.

2.2.1 Governance structure

ADIA operates under a highly specialized centralized management model, with board members directly appointed by the President of the UAE. Despite its reputation for confidentiality, ADIA maintains a rigorous information-tiering system internally to balance decision-making transparency with commercial confidentiality. Investment decisions at ADIA are overseen by a professional investment team that identifies global opportunities and dynamically adjusts portfolios based on market conditions. The institution adheres to a high-return-oriented investment strategy and possesses a distinct long-term investment horizon, though it does not employ the unique ethical review mechanisms utilized by the GPFG. ADIA's governance prioritizes profitability, often emphasizing financial gains over sustainability [6]. Critics argue this approach lacks a comprehensive framework for addressing the environmental and social dimensions of its investment policies.

2.2.2 Investment strategy

ADIA's investment strategy emphasizes diversification and long-term positioning, focusing on sectors with sustained growth potential and stable returns. Similar to the GPFG, ADIA prioritizes diversification and long-termism in its investment approach, allocating capital across global stocks, bonds, real estate, private equity, and other asset classes. However, compared to the GPFG, ADIA exhibits lower transparency in publicly disclosing its sustainable investment strategies and performance. It is undeniable that ADIA's oil revenue-centric investment strategy is constrained by the traditional energy economy framework, making it difficult to fundamentally divest from hydrocarbons—a trend at odds with global decarbonization efforts. There exists an inherent tension between oil revenues and sustainable development, as fossil fuel resources are not only naturally scarce but also carry significant environmental impacts.

2.2.3 Integration pathways with SDGs

While ADIA has been relatively less transparent in publicly disclosing its alignment with the SDGs, the fund actively seeks global investment opportunities aligned with these objectives. In recent years, it has driven the transition toward a green economy by investing in clean energy, environmental technologies, and related sectors. For instance, ADIA has funded companies leading in renewables, water management, and education, contributing to global sustainable development. A notable example is its financial support for Masdar City, a project spearheaded by the Abu Dhabi government with investments from entities like Mubadala Development Company. Initially budgeted at USD 22 billion, it aims to create the world's first zero-carbon city. As of 2024, Masdar City has established a net-zero energy building cluster and hosts the headquarters of the International Renewable Energy Agency (IRENA), underscoring the UAE's leadership in clean energy technologies. The UAE has outlined a plan to invest over USD 163.3 billion in renewable energy development by 2050 to reduce reliance on oil revenues. Additionally, Masdar has committed USD 30 billion to global clean energy projects. These initiatives are closely tied to the UAE's 2050 net-zero emissions strategy, which seeks to gradually transform the energy mix through technological advancements and green infrastructure, thereby fostering sustainable regional development.

2.3 Comparison of GPFG and ADIA in Promoting Sustainable Development

GPFG and ADIA, as leading sovereign wealth funds, adopted distinct strategies to advance sustainability. Table 1 below outlines their similarities and differences.

The similarities between GPFG and ADIA in promoting sustainable development lie in their shared long-term perspective on integrating sustainability as a tool for risk management and long-term returns, with both increasing investments in renewable energy and technology. They incorporate ESG factors into investment decisions, prioritize ESG risk management, energy transition strategies, and focus on climate change and renewable energy adoption.

Their differences are as follows: GPFG operates with greater transparency and activism, employing exclusionary policies and setting clear emissions reduction targets, whereas ADIA adopts a more pragmatic approach, favoring gradual integration and sector-specific investments with limited public intervention in corporate governance. While both advance sustainability, GPFG emphasizes regulatory compliance and public accountability, whereas ADIA prioritizes market opportunities and long-term asset allocation. GPFG reflects intergenerational responsibility and a global citizenship role, while ADIA embodies the instrumental function of a sovereign wealth fund. These differences fundamentally reflect distinct positioning: GPFG serves as a "global ESG benchmark," while ADIA acts as a "catalyst for economic transformation."

3. Challenges Faced by SWFs in Promoting Sustainable Development

3.1 Conflict Between Long-Term Sustainability Goals and Short-Term Economic Returns

While SWFs emphasize ESG investment principles, they are fundamentally tasked with preserving and growing their assets. When green projects offer lower returns than traditional assets, investment decisions often become dilemmas [7]. Although GPFG is renowned for its long-term investment approach, its annual transfer mechanism to the Norwegian Ministry of Finance (approximately 3% of the fund's value) compels its management to maintain a significant proportion of highly liquid assets, limiting allocation to long-term green projects. In 2024, GPFG was forced to adjust its lithium mining holdings due to environmental controversies, highlighting the deep-rooted tension between economic efficiency and ecological conservation. ADIA faced a "resource curse" risk from over-reliance on petrodollar investments. To address 2024 oil price fluctuations, the UAE government mandated higher cash dividend payouts from the fund, forcing it to delay Phase II investments in multiple offshore wind projects. This conflict between long-term sustainability commitments and short-term fiscal demands is pervasive among SWFs.

Table 1. Comparison of GPFG and ADIA in Promoting Sustainable Development

Dimension	Similarities	Differences	
		GPFG	ADIA
Investment Strategy	Both reduce fossil fuel exposure and increase green investments.	Proactively divests from high-carbon sectors (e g, fossil fuels); emphasizes ethical investments (e g, human rights, anti-corruption).	Retains high-carbon assets but promotes technological upgrades.
ESG Integration	Both integrate ESG into investment decisions.	Strict negative screening + active shareholder engagement.	Integrates ESG risks into long-term value investing.
Transparency	Both publish ESG-related information.	High transparency; discloses carbon footprints and divestment lists.	Limited disclosure; rarely shares detailed ESG data or voting decisions.
Climate Action	Both focus on renewable energy and emissions reduction.	Sets portfolio-wide carbon neutrality target.	Prioritizes renewable energy investments; no portfolio-wide neutrality target.
Shareholder Engagement	Both prioritize corporate governance.	Publicly pressures companies via voting/proposals.	Drives sustainable projects via private equity and infrastructure investments.
Policy Alignment	Both respond to national strategies and global trends.	Aligned with Norwegian law and the Paris Agreement.	Aligns with UAE's economic diversification goals.
International Initiatives	Both reference international ESG frameworks.	Actively joins global climate initiatives.	Less publicly involved but supports regional sustainability initiatives.

3.2 Governance Structure Deficiencies

The governance structures of SWFs may undermine their investment decisions and sustainable development practices. Political interference or bureaucratic processes can divert investment choices away from sustainability goals toward short-term political or economic objectives. For instance, some SWFs may be compelled to invest in specific regions or sectors to support national political or economic strategies, rather than based solely on investment returns and sustainability considerations [8]. Additionally, a lack of independence or professional operational capabilities in some SWFs may lead to suboptimal investment decisions. GPFG's independent governance structure and stringent ESG framework have enabled it to lead in sustainable investment, whereas ADIA's government-led model prioritizes regional strategies and geopolitical balance.

3.3 Trust Crisis Caused by Lack of Transparency and Supervision

Insufficient information disclosure is the key bottleneck restricting the effectiveness of the sustainable development of SWFs. According to relevant research, over 60% of sovereign wealth funds have not disclosed specific ESG assessment criteria, and some Middle Eastern funds even refuse to disclose the progress of divesting high-carbon assets. This opacity not only hinders the supervision of the international community but also easily raises doubts about "greenwashing". Meanwhile, the lack of a unified regulatory standard for the sustainable development of sovereign wealth funds worldwide has led to uneven ESG practices. GPFG has won the trust of the market by publicly disclosing its investment portfolio, regularly disclosing the details of its holdings and performance reports. ADIA still has the problem of insufficient information disclosure. Its investment decisions lack independence and commercial principles, which leads to market suspicion about its investment motives and decision-making process. The lack of transparency and regulatory framework not only affects investor confidence, but may also trigger political resistance from the host country and even be accused of being a government policy tool.

3.4 Risk Mismatch between Long-term Investment Cycles and Technological Iterations

SWFs investment decisions are usually based on long-term macro analysis and fundamental research. When confronted with rapidly changing technological iterations, there may be a lag in decision-making. Technological iteration may undermine the value of some traditional assets. For instance, with the development of new energy technologies, the future profitability of traditional fossil energy-related enterprises may be affected [9]. The hydrogen energy project invested by GPFG in 2018 was faced asset impairment due to the breakthrough in solid-state hydrogen storage technology in 2024, while the CCUS (carbon Capture) project laid out by ADIa in 2019 had already recorded a 35% loss due to insufficient policy support. What is more troublesome is that the industry rule that the conversion efficiency of photovoltaic cells increases by 1% every 18 months makes the existing assets of funds in the renewable energy sector constantly face the risk of technological obsolescence. This particularity forces sovereign wealth funds to establish a dynamic technological assessment mechanism in sustainable development investments.

4. Improvement Measures for SWFs to Promote Sustainable Development

4.1 Strengthening Governance Structures

SWFs need to vigorously enhance their governance structures by meticulously establishing a robust decision-making mechanism and oversight framework to ensure the independence and fairness of investment decisions. This includes introducing professional investment decision committees to ensure the scientific and expert-driven nature of decision-making processes. Establishing stringent decision-making procedures and standards safeguards the independence of investment decisions. The oversight mechanism should cover the entire investment lifecycle, with dedicated supervisory departments or third-party oversight bodies conducting real-time monitoring and evaluation of investment activities to ensure fairness [10]. Additionally, SWFs should increase transparency by regularly disclosing investment performance, risk management, and asset allocation information to the public, thereby bolstering international trust and support.

4.2 Optimizing Investment Strategies

SWFs' investment strategies should emphasize diversification, long-termism, and sustainability, prioritizing companies with minimal environmental footprints and investing in enterprises driving green technologies and clean energy development. Integrating SDGs metrics into investment decision-making processes allows for quantitative assessment of the social impact of invested companies. Incorporating ESG factors and social responsibility principles, SWFs can use ESG evaluation frameworks to quantitatively assess investment targets and direct capital toward environmentally conscious enterprises. Innovatively, SWFs can adopt circular economy models, such as repurposing surplus industry inventory fabrics in the fashion sector for remanufacturing, to achieve resource recycling.

4.3 Deep Integration with SDGs

SWFs should actively and profoundly align with the SDGs, becoming a pivotal force in driving global sustainable development. By strategically investing in areas aligned with SDGs—such as education, healthcare, and poverty alleviation—SWFs can provide financial support and expert guidance to foster global social equity and economic progress. Simultaneously, SWFs should actively participate in global climate governance by increasing investments in clean energy, energy conservation, and emission reduction projects, thereby contributing to the achievement of global carbon reduction targets.

4.4 Strengthening Risk Management

Enhancing risk management capabilities is crucial for navigating market uncertainties. SWFs should establish a robust risk management framework, leveraging advanced risk assessment models and technologies to conduct real-time monitoring and analysis of risks such as market volatility and policy changes. Based on risk assessment outcomes, SWFs should formulate corresponding risk response strategies to improve investment decision-making and risk control capabilities, ensuring their long-term stable development.

5. Conclusion

As one of the important tools for promoting sustainable development, SWFs, with its scale and long-term investment framework, has the potential to drive global sustainable development and is playing an increasingly important role on a global scale. Through case analysis, it can be seen that GPFG in Norway and ADIA in the United Arab Emirates have made positive contributions to global sustainable development. However, sovereign wealth funds also face many challenges and problems in promoting sustainable development, such as the balance between economic value and sustainable social and environmental goals, governance structure and transparency issues, and iterative mismatch risks, etc. In the future, SWFs needs to further strengthen its governance structure, optimize investment strategies, deeply integrate with the SDGs, and enhance risk management. With the continuous increase in global attention to sustainable development issues and the continuous development and improvement of the green financial market, SWFs is expected to play a greater leading role in global sustainable development. Promote more sustainable, inclusive and prosperous development globally.

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